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DE PLANTIS TOXICARIIS E MUNDO NOVO TROPICALE COMMENTATIONES XVI

Miscellaneous notes on biodynamic plants of South America

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The many plants with toxic or otherwise biodynamic properties in the South American flora are surprisingly interesting in their botanical diversity. Knowledge and occasional use of these properties appear to be unusually extensive amongst the natives of the northwesternmost part of the Amazon Valley, especially in that sector lying within the boundaries of Colombia. Ethnotoxicological reports in the literature have not been so extensive for this area as they have been for some of the other better known sectors of this great basin.

Many of the species mentioned in the following pages belong to families and genera hitherto not known to possess active organic constituents. Consequently, their ethnotoxicological study frequently may yield chemotaxonomically or even pharmacologically significant information. Often this kind of information may indicate the advisability of critical phytochemical investigation.

Earlier contributions in this series have provided ethnobotanical observations designed to encourage medically oriented examination of chosen elements of the tropical American flora. Many of the notes cited below are taken from my own field observations during plant exploration in the Amazon Valley from 1941 through 1953 and on many subsequent short trips to the southeastern part of the Republic of Colombia. Other observations are extracted from the labels of herbarium collections and are here published either because of their own intrinsic significance or because they outline uses similar to those which I have encountered for the same or related species.

Voucher specimens are deposited in the Economic Herbarium of Oakes Ames, the Gray Herbarium (both at Harvard University) or the Herbario Nacional de Colombia in Bogotá—or in several of these institutions.

The families are arranged in accord with the system of Engler & Prantl; the genera are arranged alphabetically under the families.

GRAMINEAE

Hierochloe redolens *R. Brown*, Prodr. (1810) 209.

COLOMBIA: Departamento de Santander, vicinity of La Baja, alt. 2200–2600 m. January 14–28, 1927. *E. P. Killip et A. C. Smith 18395*.

Departamento del Norte de Santander, vicinity of Mutiscua, alt. 4000 m. February 20–22, 1927. *E. P. Killip et A. C. Smith 19678*.

According to Killip and Smith, the *itamo real* is a valuable remedy in Santander, “much used by aged people” and “one of the most valuable of medicinal plants, used for many diseases.”

Coumarin has been reported from the genus *Hierochloe* (Gibbs, R. D.: *Chemotaxonomy of Flowering Plants* 3 (1974) 1899) and many species, including *H. redolens*, have a strong odour of coumarin.

PALMAE

Jessenia polycarpa *Karsten* in *Linnaea* 28 (1856) 388.

Throughout the Colombian area of the Llanos and the Colombian basin of the Amazon, this palm has the reputation of yielding an oil valuable for treating pulmonary problems. The oil from the pericarp is an excellent edible oil, and progress is now being made towards the domestication of this wild palm. There have been studies on the bromatology of the oil, but investigations concerning the widely accepted belief in the efficacy of the oil to relieve pulmonary troubles have not yet been initiated. The Makú Indians of the Río Piraparaná in the Vaupés employ the oil as a vermifuge (García-Barriga, H. *Flora Medicinal de Colombia* 1(1974) 144–146)—a medicinal use still to be scientifically examined.

ORCHIDACEAE

Eriopsis sceptrum *Reichenbach fil. et Warscewicz* in *Bonpl.* 2 (1854) 98.

BRAZIL: Estados do Amazonas, basin of Río Negro, Río Dimití, May 11–19, 1948. *R. E. Schultes et F. López* 9947.

Estado do Amazonas, Río Negro, Cocuí. May 9, 1948. *R. E. Schultes et F. López* 9997.

COLOMBIA: Comisaría del Vaupés, Río Guainía, near Cerro Monachí. June 1948 *R. E. Schultes et F. López* 10035a.

Comisaría del Amazonas, Río Apaporis, Soratama, between Ríos Pacoa and Kananarí. June 17, 1951. *R. E. Schultes et I. Cabrera* 12620.

The basal stems of this clumped epiphyte are boiled in water to extract the copious mucilage which is applied to sores of the gums and mucous membranes of the mouth for relief from discomfort. The Makuna name of this orchid in the Apaporis is *wan-oo-ma-ka* (“mouth herb”).

NYCTAGINACEAE

Neea parviflora *Poeppig et Endlicher*, *Nov. Gen. ac Sp. Pl.* 2 (1838) 46.

COLOMBIA: Comisaría del Putumayo, Umbría, Alt. 325, Forest. January–February 1931. *G. Klug*, 1955.

Called *yano muco* (“black chew”) in the Colombian Putumayo, this species is valued by the natives who chew the leaves to stain the teeth black in the belief that this custom “strengthens” the teeth and gums.

PHYTOLACCACEAE

Phytolacca bogotensis *Humboldt, Bonpland et Kunth*, *Nov. Gen. et Sp. Pl.* 2 (1817) 183.

COLOMBIA: Departamento de Cundinamarca, Pantano Redondo, Zipaquirá. Altitude 3200–3250 m. July 13, 1960. *R. E. Schultes* 22469.

Native farmers assert that cattle eating the foliage and fruit of the *Phytolacca bogotensis* are poisoned.

Cyanogenic glycosides have been reported from some species of the genus (*Gibbs, loc. cit.* 2 (1974) 1227).

Phytolacca rivinoides *Kunth et Bouché* in Ind. Sem. Hort. Bot. Berol. (1848) 15.

COLOMBIA: Comisaría del Putumayo, Río Sucumbíos, Conejo and vicinity, at mouth of Quebrada Conejo. Altitude 300 m. April 2–5, 1942. *R. E. Schultes* 3458.—Same locality and date. *R. E. Schultes* 3646. — Río Sucumbíos, Santa Rosa and vicinity. Altitude 380 (?) m. April, 1942. *R. E. Schultes* 3583.

The Kofán Indians occasionally mix the leaves of *Phytolacca rivinoides*, which they call *un-shum-bey*, with the leaves of *Phyllanthus* for stupefying fish. It is also commonly used as a saponifier for washing clothes. The name in Spanish in the region is *altasa* or *altusa*.

RANUNCULACEAE

Ranunculus peruvianus *Persoon*, Syn. Re. 2 (1806) 103.

COLOMBIA: Departamento de Cundinamarca. Siberia, Páramo de Palacios, 9,000–10,000 feet. July 11, 1960. *R. E. Schultes* 22474.

The roots are boiled to prepare a tea which is considered to be a stimulant for the aged and weak. It is employed in folk-medicine in the hills near Bogotá.

MENISPERMACEAE

Abuta Imene (*Mart.*) *Eichler* in Flora 47 (1864) 389.

COLOMBIA: Comisaría del Vaupés, Río Apaporis, Raudal de Jirijirimo. January 21, 1952. *R. E. Schultes et I. Cabrera* 14958a.

Along the Río Kananarí, an affluent of the Apaporis, the Taiwano Indians indicate that they utilize the bark of the stem of *Abuta Imene* in preparing one kind of curare.

Abuta splendida *Krukoff et Moldenke* in Bull. Torr. Bot. Club 68 (1941) 251.

COLOMBIA: Comisaría del Putumayo, Río Sucumbíos (San Miguel) Conejo and vicinity, near Quebrada Conejo. April 2–5, 1942. *R. E. Schultes* 3235.

The bark of this species of *Abuta* is employed by the Kofán Indians in the preparation of one of their strongest curares. The

type of *Abuta splendida* was collected in Bolivia, far from this Colombian locality. The Kofán name of this liana is *sa-pe-pa*.

Abuta yaupesensis *Krukoff et Barneby* in Mem. N.Y. Bot. Gard. 20 No. 2 (1970) 19.

COLOMBIA: Comisaría del Vaupés, Río Piraparaná, Caño Teemeeña (Lobo Igarapé). September 10, 1952. *R. E. Schultes et I. Cabrera 17344*.

This collection is the type of the species. The bark of the lower stem is the principal ingredient of one of the curares prepared by the nomadic Makú Indians of the lower Piraparaná. The Barasana Indians of the Río Piraparaná formerly employed this species as their main curare plant.

Anomospermum reticulatum (*Mart.*) *Eichler* in Flora 47 (1864) 388.

COLOMBIA: Comisaría del Amazonas, Trapecio Amazónico, Río Loretoyacu. Alt. 100 m. September 28, 1946. *R. E. Schultes et al. 8287*.

The Tikuna Indians of the Trapecio Amazónico of Colombia formerly utilized the bark of this species in preparation of one of their arrow poisons.

Andontocarya tripetala *Diels* in Notizbl. Bot. Gart. Berlin 13 (1936) 28.

COLOMBIA: Comisaría del Amazonas, Trapecio Amazónico, Río Loretoyacu, Lago Socó. Alt. 100 m. November, 1946. *R. E. Schultes et G. A. Black 8623*.

A brew made by boiling together the bark of *Adontocarya tripetala*, the zapote, *Matisia cordada* H. et B., and fruits of *Capsicum annum* L. is commonly taken in the Leticia area of Colombia and in adjacent Peru and Brazil to expel intestinal parasites.

Orthomene Schomburgkii (*Miers*) *Barneby et Krukoff* in Mem. N.Y. Bot. Gard. 22 (1971) 80.

COLOMBIA: Comisaría del Vaupés, Río Apaporis, Jinogojé, mouth of Río Piraparaná. Alt. 200 m. June 5, 1952. *R. E. Schultes et I. Cabrera 16602*. Same locality. August 25, 1952. *R. E. Schultes et I. Cabrera 17026*.

The Makú name of this scandent shrub, said to be toxic, is *chawm-aat'*.

Telotoxicum peruvianum *Moldenke* in *Britt.* 3 (1938) 45.

COLOMBIA: Comisaría del Vaupés, Río Piraparaná, Caño Teemeeña (Lobo Igarapé). "Small tree. Fruit dark green, Barasana name = *bo-de'-mee-see*." September 10, 1952. *R. E. Schultes et I. Cabrera* 17340.

The bark of this treelet is the main ingredient in one of the Barasana curares.

This species was described from Amazonian Peru.

ANNONACEAE

Guatteria calva *R. E. Fried* in *Svensk. Vet. Akad. Handl.*, ser. 3, 24, No. 10 (1948) 9.

COLOMBIA: Comisaría del Vaupés, Río Vaupés, Mitú and vicinity, Urania. On granite slope. "Small tree, 20 feet. Flowers green, petals leathery. Leaves, bark, flowers very alkaloid-positive. Fruit slightly positive." September 27–October 20, 1966. *R. E. Schultes, R. F. Raffauf et D. Soejarto* 24323.

The Kubeo Indians indicate that the bark of the stem or trunk of this small tree is an ingredient of a type of curare which they prepared in former years. There were three ingredients, according to informants, but the identity of the other two plants have not yet been established beyond the statement that they are "leaves of trees."

Unonopsis veneficiorum (*Mart.*) *R. E. Fries* in *Acta Hort. Berg.* 12 (1937) 238.

COLOMBIA: Comisaría del Vaupés, Río Apaporis basin, Río Pacoa. "Puinave name = *choon*." February 7–12, 1952. *R. E. Schultes et I. Cabrera* 15269.

The Barasana Indians, native to the lower Apaporis basin, employ the root and the bark of the lower stem of this tree in the preparation of an arrow poison. This report represents apparently the third concerning the role of this plant in curare. The Puinave Indians, some of whom have migrated recently into the Apaporis basin, are not aware of this use of *Unonopsis veneficiorum*, although they know the plant and recognize it as "dangerous."

This annonaceous species is apparently rather widely utilized in the Colombian Amazonia as the basis of an arrow poison. The first report was published by von Martius (Spix, J. B. and K. F.

D. von Martius "Reise in Brasilien" [1831] 1237), who stated that the Indians in the Rio Japurá (Río Caquetá) and Rio Negro of Colombia and Brazil valued it (*Guatteria veneficiorum*) for this purpose. It has generally been overlooked in the literature, although Claude Bernard, in his classic *Leçons sur les effets des substances toxiques et médicamenteuses* (1867) 245 mentioned Martius' report. A recent report by Pinkley (in Schultes, R. E. in Bot. Mus. Leaflet. Harvard Univ. 22 [1969] 134–136) has placed its use amongst the Kofán Indians of the Colombo-Ecuadorian border (*H. V. Pinkley* 558).

LEGUMINOSAE

Entada polyphylla *Benth* in Hooker, Journ. Bot. 2 (1840) 133.

COLOMBIA: Comisaría del Amazonas, Trapecio Amazónico, Río Loretoyacu. Alt. 100 m. September 28, 1946. *R. E. Schultes* 8400c.

A warm decoction of the seeds of this species is valued among the Tikunas of the Trapecio Amazónico as a gargle in cases of extreme nasal and pulmonary congestion as a result of severe catarrhal attacks to which they are prone in the cooler and wetter parts of the year.

Monopteryx angustifolia *Spruce ex Benth* in Martius, Fl. Bras. 15, Pt. 1 (1862) 307.

COLOMBIA: Comisaría del Vaupés, Río Naquieni, Cerro Monachí. June 1948. *R. E. Schultes et F. López* 10125.

A bitter tea prepared from the bark of this tree is valued in the Río Guainía basin as a vermifuge.

Monopteryx Uaucu *Spruce ex Benth* in Martius, Fl. Bras. 15, Pt. 1. (1862) 308.

COLOMBIA: Comisaría del Vaupés, Río Guainía, Caño del Caribe and vicinity. November 2, 1952. *R. E. Schultes, R. E. D. Baker et I. Cabrera* 18270.

The seeds of *Monopteryx Uaucu* are very oily but, boiled and toasted, they serve the natives of the upper Rio Negro of Brazil and the Colombian Vaupés as food. The tree, which is very tall with enormous buttress roots, has extremely important mythological significance to the Kuripakos of the Río Guainía.

The bark, scraped from the buttress roots and boiled, provides a tea which is often employed, as in the case of *Monopteryx angustifolia*, to expel intestinal worms. The Kuripako name of the tree is *ow-wei'-na*.

MALPIGHIACEAE

Banisteriopsis Cabrerana Cuatrecasas in Webbia 23, Pt. 1 (1958) 493.

COLOMBIA: Comisaría del Vaupés, Río Piraparaná, Caño Teemeña. September 9, 1952. *R. E. Schultes et I. Cabrera 17297*. Same locality. *H. García-Barriga 14321a*.

García-Barriga (loc. cit., 2 (1975) 54) reports that the Indians of the lower Piraparaná (the Barasana tribe) make their hallucinogenic drink from the stems of this vine. It is known locally as *yagé*.

VOCHYSIACEAE

Vochysia columbiensis Marcano-Berti in Pittieria, No. 1 (1967) 8.

COLOMBIA: Comisería del Vaupés, Río Kananarí, Cerro Isibukuri. "Small tree, 30 feet tall. Flowers yellow." December 4, 1951. *R. E. Schultes et I. Cabrera 14704a*.

The Kabuyarí Indians call this tree *ka-ho'-gaw*. The bark is said to be an ingredient of one type of arrow poison prepared by the nomadic Makú Indians of the Río Piraparaná. The other two ingredients could not be ascertained beyond the fact that one was a leaf, the other a reddish berry. The arrow poison is made quickly by the Makú who use it for hunting small birds.

The chemistry of the Vochysiaceae has hardly been investigated. (Gibbs, loc. cit. 3 (1974) 1677).

Vochysia ferruginea Martius, Nov. Gen. et Sp. Pl. 1 (1826) 151, t. 92.

COLOMBIA: Comisaría del Vaupés, Río Apaporis, Raudal de Jirijirimo. Quartzitic base. April 1951. *R. E. Schultes et I. Cabrera 14538*.

The Kubeo Indians call this tree *too-á-ke*. They employ a decoction of the bark as a wash for ulcerating sores on the legs.

The dried and powdered leaves are occasionally added to coca in the belief that they are beneficial for sores of the mucous membrane of the mouth and gums.

***Vochysia laxiflora* Stafleu** in Acta Bot. Neerl. 3 (1954) 407.

COLOMBIA: Comisaría del Vaupés; Río Apaporis, Raudal de Jirijirimo. "Flowers yellow. Large tree. Puinave: *po-ho-glo*." November 25, 1951. *R. E. Schultes et I. Cabrera 14542*. Río Kananarí, Cerro Isibukuri. "Flowers yellow. Leaves erect. Tree 80 feet tall. Large crown. Bark grey-brown." September 29, 1951. *R. E. Schultes et I. Cabrera 14678*. — Same locality. "Medium sized tree. Flowers yellow. Leaves erect." December 4, 1951. *R. E. Schultes et I. Cabrera 14707*. — Río Apaporis, Jinogojé. "Flowers yellow. Small tree 35 feet tall." June 8, 1952, *R. E. Schultes et I. Cabrera 16676*.

Comisaría del Amazonas; Río Apaporis, Soratama. "Flowers yellow. Height 90 feet." February 4, 1952. *R. E. Schultes et I. Cabrera 15146*. — Same locality and date. *R. E. Schultes et I. Cabrera 15149*.

The Puinave Indians call *Vochysia laxiflora* by the same name that they use for *V. ferruginea*, although they easily recognize the two as different. They do not use it medicinally.

The several Indian tribes (Taiwanos, Barasanas, Makunas) resident in the middle Apaporis, on the contrary, value this tree for several therapeutic purposes. Its leaves are boiled with the leaves of coca (*Erythroxylon Coca* Lam.) to prepare a tea "when urination is painful or impossible." The bark, dried and finely powdered, is rubbed into skin sores which will not react to more usual treatments with various washes. The bark is likewise thrown on fires, and the acrid smoke thus produced is vigorously inhaled to relieve asthmatic and other respiratory ailments.

***Vochysia lomatophylla* Standley** in Publ. Field Mus. Nat. Hist. Bot. Ser. 22 (1940) 150.

COLOMBIA: Comisaría del Vaupés, Río Pacoa. "Gigantic tree. Flowers yellow. Barasana: *ka-kwee-gaw-ya*." February 7–12, 1952. *R. E. Schultes et I. Cabrera 15234*.

PERU: Departamento de Junín, Mazamari to Satipo. "*Sacha-alfaro*. Tree 25 m. high; fruit green; bark like 'capirona' — paler (beige). Perhaps used by the Campa tribe as contraceptive." September 14, 1960. *F. Woytkowski 6021*.

The Barasana Indians indicate that, when pulverized leaves and bark of *Vochysia lomatophylla* are given to pregnant women in warm chicha, the effect is abortifacient and that is "was formerly used for this purpose." In view of this report, the indecisive annotation on the Peruvian collection cited above may assume added significance.

EUPHORBIACEAE

Nealchornea yapurensis *Huber* in *Bol. Mus. Goeldi* 7 (1913) 297.

COLOMBIA: Comisaría del Amazonas, Río Loretoyacu, October 31, 1946. *G. Black et R. E. Schultes* 46-257.

Comisaría del Amazonas, Río Apaporis, Soratama. Flowers yellowish green. Flowers fragrant of lemon. Latex sparse, white. Flood-bank. Taiwano = *bo-to-ka*. July 31, 1951. *R. E. Schultes et I. Cabrera* 13228.

Comisaría del Vaupés, Río Papurí. Teresita. May 28, 1953. *R. E. Schultes et I. Cabrera* 19469.

The Taiwano Indians occasionally crush the leaves of this small tree for use as a fish poison. It is said to be very efficaceous and that it would be more extensively employed but for the scarcity of trees in the area.

Phyllanthus piscatorum *Humboldt, Bonpland et Kunth*, *Nov. Gen. et Sp. Pl.* 2 (1817) 113.

COLOMBIA: Comisaría del Putumayo, Río Putumayo and vicinity. Kofán Indian name: "*dzin-zí-a-pa*". March 23-25, 1942.

Comisaría del Amazonas, Río Igaraparaná, La Chorrera. June 6, 1942. *R. E. Schultes* 3898.

This shrub is widely cultivated as a fish poison, for which use the leaves and branches are crushed and thrown into the water. The Witoto Indians of La Chorrera, however, employ a powder prepared from the dried leaves as an insect repellent, dusting it over the body at night before sleeping.

ICACINACEAE

Calatola columbiana *Sleumer* in *Notizbl. Bot. Gart. Berlin* 15 (1940) 247.

ECUADOR: Napo, Río Aguarico, Durena. June 24, 1966. *H. V. Pinkley* 318.

The leaves of *Calatola columbiana* are chewed by the Kofán Indians to blacken the teeth and lips. The Kofán name of this tree is *ishoan-zí-hě*. (Pinkley, H. V. *The Ethnoecology of the Kofán Indians* (1973) 240 Unpubl. Ph.D. Thesis, Harvard University, Cambridge, Mass.).

SAPINDACEAE

Paullinia emetica *R. E. Schultes* in *Caldasia* 2 (1944) 419.

COLOMBIA: Comisaría del Vaupés, Upper Río Apaporis basin, Río Macaya, Cachivera del Diablo. Alt. 350 m. "Vine on riverside vegetation. Used by Karijonas (former inhabitants) as an emetic: an infusion of the leaves." May 22, 1943. *R. E. Schultes* 5511.

The Karijona Indians, who formerly lived in the headwaters of the Apaporis but remnants of whom now live in Miraflores on the Río Vaupés, state that the leaves of this vine were formerly made into a tea for use as a strong emetic.

CARYOCARACEAE

Anthodiscus obovatus *Bentham ex Wittmack* in *Martius, Fl. Bras.* 12, Pt. 1 (1886) 358.

BRAZIL: Estado do Amazonas, Upper Rio Negro basin, Rio Xié, Cachoeira Cumatí. "Small tree. Flowers yellow." November 29 — December 7, 1947. *R. E. Schultes et F. López* 9226.

The leaves of this small tree are often employed, crushed and thrown into still water, as a minor fish poison.

Anthodiscus peruanus *Baillon* in *Adansonia* 10 (1872) 241.

COLOMBIA: Comisaría del Vaupés, Río Negro, at confluence of Ríos Guainía and Casiquiare, Caño Ducuruapo (Igarapé Rana). In caatinga. "Tree about 35–40 feet high; diameter 18 inches. Wood hard, white. Bark shaggy, dark brown. Flowers bright yellow. Leaves very glossy, light green." December 13–17, 1947. *R. E. Schultes et F. López* 9387. Río Apaporis, Jinogojé (at mouth of Río Piraparaná) and vicinity. Alt. about 700 feet. "On high knoll. Enormous tree, 90 ft. tall. Flowers yellow. Bark white. Tanimuka = *tee-fe-roo-ka*; Makuna = *ko-men-tan-go*; Makú = *chee-aw'*". June 8, 1952. *R. E. Schultes et I. Cabrera* 16623.

In both the Río Guainía and the Río Apaporis, this tree is valued as a minor fish poison. The Kuripako Indians of the Guainía and the Makunas of the middle Apaporis crush the leaves and young branches with a rather liquid clay-mud to cast into still water. Its action is fast but not long-lasting. Nothing is known of the possible chemical constituents responsible for the piscicidal activities of *Anthodiscus obovatus* and *A. peruanus*.

QUIINACEAE

Quiina leptoclade *Tulasne* in *Ann. Sci. Nat.*, ser. 3, 11 (1849) 159.

COLOMBIA: Comisaría del Vaupés, Río Apaporis, Jinogojé. "Small tree. Fruit orange. Makuna name = *na-mor-so-roo*. Makú name = *teg-ee-doo*." June 15, 1952. *R. E. Schultes et I. Cabrera* 16730.

A snuff of the dried leaves of this tree is employed to stop recurrent nose bleeds, apparently a common ailment amongst the Makú Indians. Little is known of the chemistry of the genus *Quiina* (Gibbs loc. cit. 3 (1974) 1371, 1388).

MARCGRAVIACEAE

Souroubea crassipetala *de Roon* in *Acta Bot. Neerl.* 18 (1969) 701.

COLOMBIA: Comisaría del Vaupés, Río Apaporis, Raudal Yayacopi (La Playa) and vicinity. "Epiphytic vine. Flowers dark red, yellow at centres." February 16, 1952. *R. E. Schultes et I. Cabrera* 15401. — Same locality. "Epiphytic vine. Flowers maroon and orange; fruit red-orange." August 18, 1952. *R. E. Schultes et I. Cabrera* 16912.

A mouth wash of the leaves of this vine is prepared for treating "sores of the mouth" — various irritations of the mucous membrane which may have a variety of causes.

Little is known of the chemistry of the Marcgraviaceae. Tannins are high in some species (Gibbs, loc. cit. 3 (1974) 1371), explaining possibly this native use which may be based on astringency. The presence of resin cells in some species of *Souroubea* might likewise justify this use.

Souroubea guianensis *Aublet* var. **cylindrica** *Wittmack* in *Martius, Fl. Bras.* 12, Pt. 1 (1878) 253.

COLOMBIA: Comisaría del Vaupés, Río Piraparaná, Caño Teemeeña, Savannah O-kee-me-gaw. "Bush. Growing from sand. Flowers green-yellow." September 6, 1952. *R. E. Schultes et I. Cabrera* 17238 — Río Piraparaná, Caño E-ree-ee-ko-mee-o-kee. September 18, 1952, *R. E. Schultes et I. Cabrera* 17510.

This plant is known only from British Guiana and Colombia. The collections cited above are the first from Colombia.

FLACOURTIACEAE

Mayna amazonica (*Mart.*) *Macbride* in *Field Mus. Bot.* 13 (1941) 16.

COLOMBIA: Comisaría del Putumayo, Río Sucumbíos, Conejo y los alrededores, en frente a la Quebrada Conejo. "Kofán: *tza-he-vee-ko*. Tree. Medicinal bath for cramps." April 2–5, 1942. *R. E. Schultes* 3515. — Buena Vista. October 13, 1972. *F. Piaguaje* for *J. Langdon s.n.*

In view of the use by Kofán Indians of a warm bath made of the leaves of *Mayna amazonica* to relieve cramps, the recent note by the anthropologist Langdon, who was working among the neighboring Sionas, on the use of the wood and leaves of this plant is noteworthy. Langdon reports that the wood and leaves are heated in water to prepare a decoction employed as a bath to relieve a condition causing aching of the legs and a feeling as though small ants were biting the legs.

Mayna linguifolia *R. E. Schultes* in *Caldasia* 3 (1945) 439.

COLOMBIA: Comisaría del Amazonas; Trapecio Amazónico, Río Loretoyacu. Alt. 100 m. Oct. 20–30, 1945. *R. E. Schultes* 6593.

Witoto Indians, originally from the Río Igaraparaná but now residing in the region of Leticia, report that formerly an oil from the seeds of this treelet was used to cure "sores of the skin." The Witoto name of the plant is *we-pe-te-ka*.

Mayna longifolia *Poeppig et Endlicher*, *Nov. Gen. ac Sp. Pl.* 3 (1845) 64, t. 271.

COLOMBIA: Comisaría del Amazonas, Río Miritiparaná, Caño Guacayá. "Fruit cauline, greenish white." April 24, 1952. *R. E. Schultes et I. Cabrera* 16285.

ECUADOR: Napo, Río Aguarico, Dureno. "Primary forest. Aril around seed edible. Tree. Kofán: *itetsi pandiri cho*." December 21, 1965. *H. V. Pinkley* 28.

The seeds of this shrub are often kept in Indian houses for medicinal use: crushed and boiled in water, they are employed as an emetic, especially in cases of serious food poisoning. This tea must, however, be used with extreme caution, since it is itself toxic if vomiting is not provoked, causing dizziness, excessive sweating and uncontrollable trembling.

The plant and this use are well known among all of the Indians of the area. The Makuna call it *oo-too-mee-ko*; the Miraña, *do-ro-hě*; the Tanimuka, *ya-poo-moo-ho*; the Yukuna, *ka-sa-ra* ("tree of the beetle").

It is probably significant that, according to Pinkley, the Kofán Indians consider the aril edible.

Mayna toxica *R. E. Schultes* in *Rhodora* 65 (1973) 16, t. 10.

COLOMBIA: Comisaría del Amazonas, Río Caquetá, La Pedrera and vicinity, Quebrada Tonina. On high land. "Small tree, 20 feet tall. Flowers white." October 5, 1952. *R. E. Schultes et I. Cabrera* 17731.

The Miraña Indians of the region of La Pedrera assert that the ground up bark and seeds of this species are given to dogs in food as a poison. The same use has previously been reported (*Schultes in Rhodora*, loc. cit.) from other Indian tribes living in the Colombia Vaupés. At that time, it was indicated that: "The fact that at least two species — *Mayna muricida* *R. E. Schultes* and *M. toxica* — are similarly employed by Indians for their toxic properties and in far-separated parts of the Colombian Amazonia suggests that an investigation into the chemical constituents of this genus might be of interest."

VIOLACEAE

Corynostylis volubilis *L. B. Smith et Fernández* in *Caldasia* 6 (1954) 143.

COLOMBIA: Comisaría del Amazonas-Vaupés, Río Apaporis, Randal Yayacopi (La Playa) and vicinity. Alt. about 800 ft. "Flowers white. Vine." August 18, 1952. *R. E. Schultes et I. Cabrera* 16972.

Comisaría del Vaupés, Río Piraparaná, Caño Oo-moo-na. September 3, 1952. *R. E. Schultes et I. Cabrera* 17155, 17158.

A tea made by boiling the bark of *Corynostylis volubilis* for three hours is taken over a period of three days to expel intestinal parasites. That this plant has potent physiologically active principles which go beyond the expulsion of intestinal parasites is evidenced by the peculiar behavior which I have seen of men taking this tea as a cure: they are, for two or three days, nearly sleepless; they are nervous and irritable during the treatments; they occasionally are subject to violent vomiting. The medicine is employed especially amongst the Makuna Indians. This use of

the plant is apparently unknown elsewhere in the Colombian Amazonia (e.g., in the Leticia region, where the species is very common.)

COMBRETACEAE

Combretum Cacoucia (*Aubl.*) *Exell* in *Kew Bull.* (1931) 469.

BRAZIL: Estado do Pará, Utinga, Belém. "*Rabo de arara*. Extensive liana. Acrid water in stem. Flowers red, said to be toxic." September 1947. *R. E. Schultes* 8668.

There are numerous reports in the literature which, like the report cited above, claim that the flowers of *Combretum Cacoucia* are poisonous. There seems to be no chemical evidence to sustain such an assertion, yet the number of folk reports would appear to justify serious investigation.

Caffeine and tannins have been reported from *Combretum* (*Gibbs*, loc. cit. 3 (1974) 1478).

ERICACEAE

Befaria congesta *Fedtschenko et Basilevskaja* in *Not. Syst. Herb. Hort. U.S.S.R.* 6 (1926) 42; *Bot. Gaz.* 85 (1928) 319.

COLOMBIA: Departamento de Cundinamarca, Macizo de Bogotá, above La Cita. May 10, 1946. *R. E. Schultes* 7192.

Peasants in the vicinity of La Cita report that a thick syrup made by boiling the bark of this plant in a sugar-water solution acts to relieve severe coughing.

Befaria resinosa *Mutis ex Linnaeus filius*, *Suppl. Pl.* (1781) 246.

COLOMBIA: Departamento de Cundinamarca, Macizo de Bogotá, El Retiro, Bogotá. Altitude 2600–2700 m. May 7, 1946. *R. E. Schultes* 7204a — Represa de Sisga. Altitude about 9000 feet. "Large bush. Flowers bright red, sticky." March 2, 1953. *R. E. Schultes* 18799.

The flowers of this shrub are often prepared in tea form as an expectorant. *García-Barriga* likewise reports this use (loc. cit., 2 (1975) 346) as well as its employment as an antitusant.

SOLANACEAE

Brugmansia x insignis (*Barb. Rodr.*) Lockwood ex R. E. Schultes, *comb. nov.*

Datura insignis Barbosa Rodrigues in *Vellozia*, Ed. 1, 1(1888); Ed. 2, 1 (1891) 62.

Dr. Tom E. Lockwood monographed the genus *Brugmansia* for his Ph.D. thesis at Harvard University — *A Taxonomic Revision of Brugmansia, Solanaceae*, Unpubl., Cambridge, Mass. (1973) — but was prevented from publishing his nomenclatorial conclusions by his untimely death. That he fully intended to do so is indicated in his article in the *Botanical Museum Leaflets, Harvard University* 23 (1973) 281. In the meantime, he prepared the treatment of the genus *Brugmansia* for *Hortus Third* [Bailey, L.H. and E.Z. Bailey, (1976) 184, Macmillan, New York] in which "*B x insignis* (Barb. Rodr.) Lockwood" is given. Since no basionym was cited, the new combination was not validly made. Lockwood considered *Brugmansia x insignis* to be a hybrid between *B. suavelolens* x *B. versicolor*.

Inasmuch as there is a need for this binomial in connection with phytochemical publications, the above new combination is proposed.

APOCYNACEAE

Malouetia Duckei Markgraf in *Notizbl. Bot. Gart. Berlin* 9 (1926) 962.

COLOMBIA: Comisaría del Vaupés, Río Kuduyarí, Cerro Yapobodá. At base of mountain. "Small tree. Latex white. Puinave name = *pom-ka*; Kubeo name = *yau-wa-hau-ka-hee*." October 1, 1951. R. E. Schultes et I. Cabrera 14170.

This collection extends *Malouetia Duckei* into Colombian territory. According to Kubeo informants along the Río Kuduyarí, crushed leaves and stems are employed as a fish poison.

Malouetia nitida Spruce ex Mueller-Argoviensis in *Martius, Fl. Bras.* 6, Pt. 1 (1860) 94.

García-Barriga (*loc. cit.*, 2 (1975) 434) reports that *Malouetia nitida* is said to be "very poisonous." Several leaves, mixed

with meat, were sufficient to kill a dog in a few minutes. In the Llanos of eastern Colombia, peasants are said to crush the leaves and apply them as a cure for gangrenous ulcers. An infusion of the leaves is likewise taken for "heart disease." The Saliva Indians of the Colombian Llanos are reported to prepare a very active poison from the leaves.

Steroid alkaloids have been isolated from an African species of *Malouetia* (Gibbs, loc. cit. (1974) 346), but chemical studies on South American species appear not to have been carried out on any systematic basis.

RUBIACEAE

Calycophyllum Spruceanum (Benth.) Hooker filius ex K. Schumann in Martius, Fl. Bras. 6, Pt. 6 (1889) 191.

PERU: Departamento de Loreto, Río Amazonas, Iquitos. "*Capirona*. Tree 20 m. Decoction of the bark is used for *sarna negra* (an arachnid that lives under the skin.) Dry pulverized bark applied for fungus infections." June 26, 1966. R. T. Martin et C. A. Lau-Cam 1346.

Chemical studies of this conspicuous tree of the Amazon have apparently never been conducted. Its characteristic bark is widely used for a variety of medicinal purposes in the upper Amazon region. In Peru, a decoction of the bark is used against "sarna negra", an arachnid that lives under the skin; the dried, powdered bark is also applied for fungus infections.

The interesting folk uses of the bark of this conspicuous tree strongly suggest the need for phytochemical and pharmacological studies. Nothing apparently is known of the chemical constituents. Its characteristic bark has a variety of other less specific medicinal uses in the indigenous populations of the upper Amazon.

Isertia hypoleuca Bentham in Hooker, Journ. Bot. 3 (1841) 220.

COLOMBIA: Comisaría del Amazonas, Río Amazonas, Leticia. Altitude about 100 m. "Flowers scarlet within, fringes yellow. Leaf pale beneath." September, 1946. R. E. Schultes 8207.

The non-indigenous population in Leticia administers a tea made from the leaves of *Isertia hypoleuca* and the crushed seeds of the papaya (*Carica Papaya* L.) in cases of menstrual irregular-

ity, a use said to have been imported from the region of Iquitos in adjacent Peru.

Examination of the leaves of *Isertia hypoleuca* from the same population from which *Schultes 8207* was taken indicate the presence of sitosterin, *d*-amyirin and taraxasterol (Lau-Cam, C.A. in *Phytochem.* 12 (1973) 475).

CUCURBITACEAE

There is increasing evidence that this family has members which are toxic and which may contain highly interesting biodynamic principles as yet uninvestigated.

Anguria umbrosa *Humboldt, Bonpland et Kunth, Nov. Gen. et Sp. Pl.* 2 (1817) 121.

VENEZUELA: Estado de Carabobo, Hacienda de Cura, near San Joaquín. Alt. 480–1200 m.

“Rhizome said to be poisonous. Common name: *pasana*.” July 5–8, 1918. *H. Pittier 7931*.

This collection indicates, with no explanatory detail, that the “rhizome” is considered to be toxic in Venezuela. The vernacular name in Venezuela is *pasana*.

Cayaponia racemosa *Cogniaux in De Candolle, Monogr. Phan.* 3 (1881) 768.

EL SALVADOR: Departamento de Ahuachapan. Vicinity of Ahuachapan. Alt. 800–1000 m. “Said to be poisonous, especially for cattle. *Sandía de culebra, hierba coral, camara, taranta*. Jan. 9–27, 1922. *P. C. Standley 19724*.”

As yet, no important constituents have been reported from *Cayaponia*, except fatty oils from the seeds (Hegnauer 3 (1964) 619). This report from El Salvador (Altschul, S. von R. “*Drugs and Foods from Little Known Plants — Notes in Harvard University Herbaria*” 1973, 293), however, bears chemical investigation, especially in view of the interesting use in the Colombian Amazonia of *C. ophthalmica* R. E. Schultes in treating conjunctivitis (Schultes, R. E. in *Bot. Mus. Leafl. Harvard Univ.* 20 (1964) 324). A spot test for alkaloids indicated a negative result for *Cayaponia ophthalmica*.

Gurania rufipila Cogniaux in Bull. Soc. Bot. Belg. 14 (1875) 30.

COLOMBIA: Comisaría del Amazonas, Río Miritiparaná, Caño Guacaya. "Vine. Flower vermillion. Tanimuka name: *mee-ree-fee-ka-mo'-ma-ka*. Flood banks. Stem reputedly poisonous." March 5, 1952. R. E. Schultes and I. Cabrera 15809.

Schultes and Cabrera 15809 represents the second collection of *Gurania rufipila*. The type was collected in Leticia, Colombia by E. Ule in 1902. A third collection, *F. Woytkowski, 5851*, has recently been made in the Departamento de Junín in Peru.

Although the Tanimuka Indians apparently make no use of this species, its stem is considered to be toxic when eaten.

PLATE 18

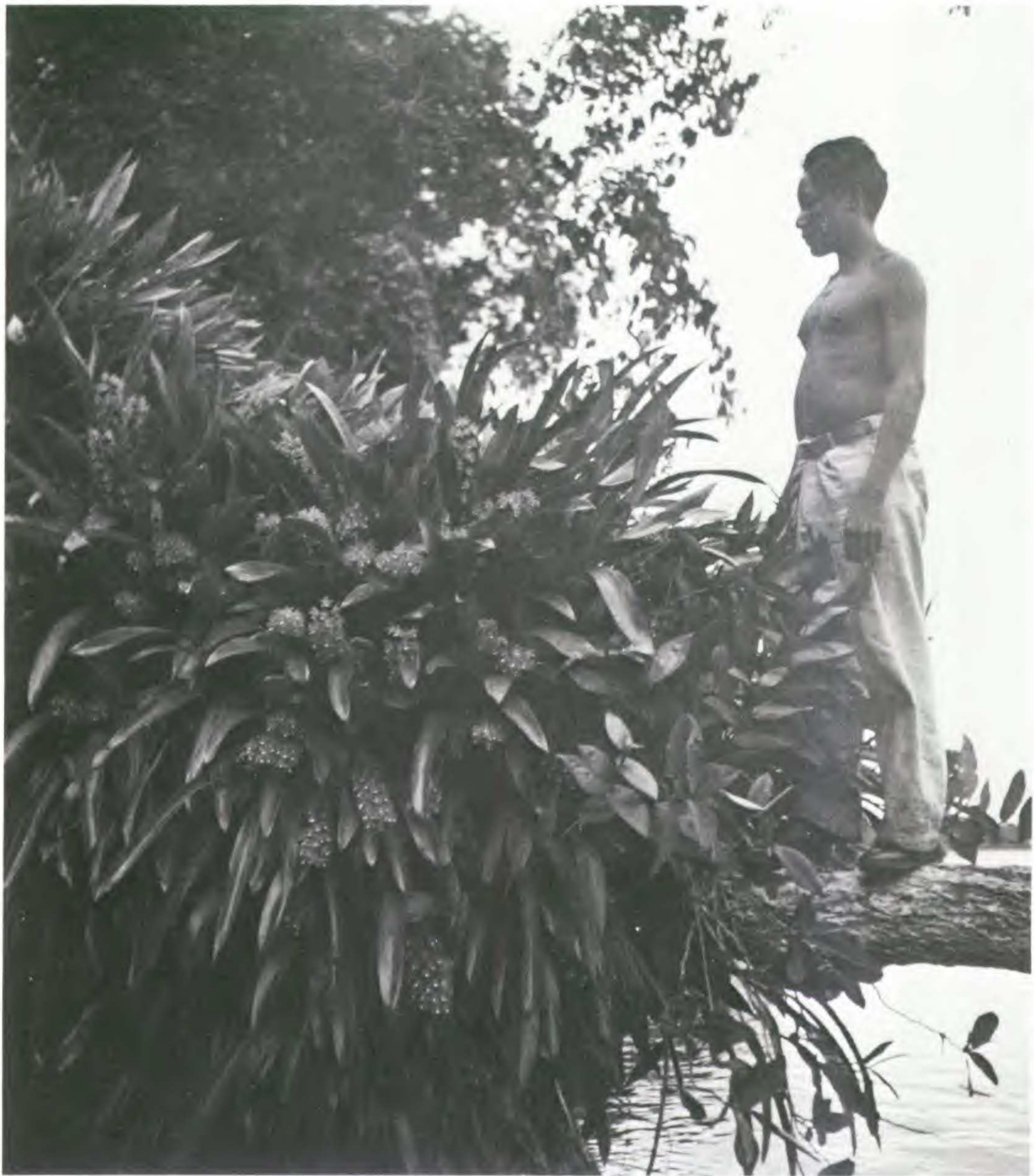


Plate 18. A clump of *Eriopsis sceptrum* (from which the collection *Schultes et Cabrera 12610* was made). Río Apaporis, Colombia. Photo, R. E. Schultes.

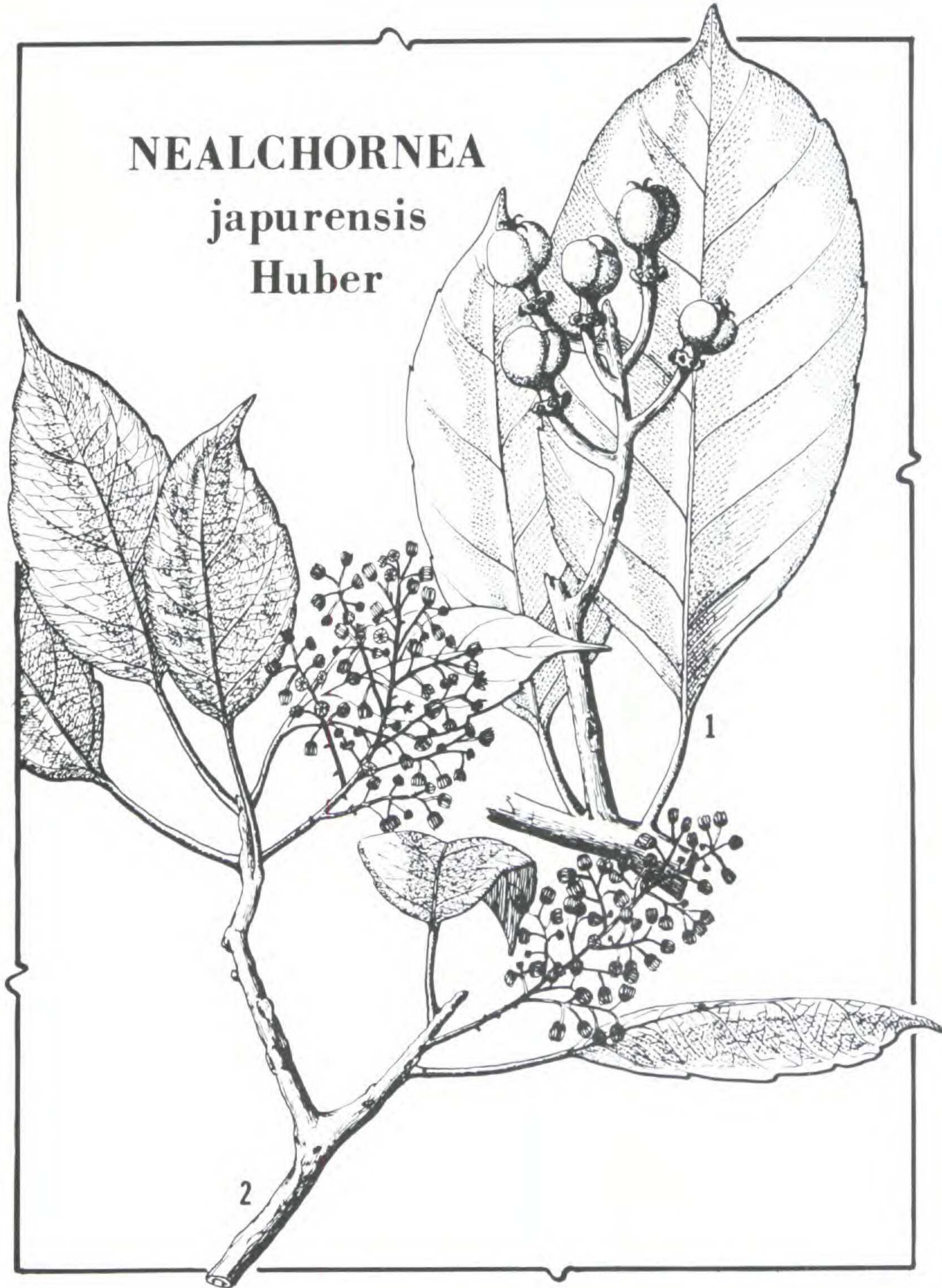


PLATE 20



CALATOLA columbiana Sleumer